LISTING OF THE CLAIMS:

1. – 9. (canceled)

10. (currently amended) The device of claim 19 [[6]] wherein ~~said Q-axis control circuit produces said quadrature voltage command signal, and the other one of said pair of clamps limit~~ the second clamp limits said quadrature voltage command signal (Vqs) in accordance with the following in a motoring mode:

$$MIN \leq Vqs \leq \left\lfloor \sqrt{Vmag^{*2} - Vds^{2}} \right\rfloor * K .$$

11. (currently amended) The device of claim 20 [[6]] wherein ~~said Q-axis control circuit produces said quadrature voltage command signal, and the other one of said pair of clamps limit~~ the second clamp limits said quadrature voltage command signal in accordance with the following in a generating mode:

$$MIN \leq Vqs \leq (Vmag^{*}) * K$$ ~~$MIN \leq Vqs \leq Vmag^{*} * K$~~.

12. (currently amended) A device to regulate current provided to a permanent magnet machine responsive to a plurality of phase current signals to produce torque on a shaft comprising:

a processing and drive circuit responsive to a direct voltage command signal and a quadrature voltage command signal, said processing and drive circuit configured to produce said plurality of phase current signals for input to said permanent magnet machine;

a current regulator including,

a command circuit responsive to a torque input command signal configured to produce a direct current command signal and a quadrature current command signal;

a control circuit responsive to the direct and quadrature current command signals configured to produce said direct and quadrature voltage command signals; and

a limiter configured to limit the direct and quadrature voltage command signals to a preselected level, ~~The device of claim 1~~ wherein said limiter is operative to limit said direct ~~and quadrature~~ voltage command signal (Vds) ~~signals Vds~~ and said quadrature voltage command signal Vqs as follows:

Vds = -Vmag* [sin(Delta Maximum)],

Vqs = Vmag* [cos(Delta Maximum)],

Where Delta is greater than Delta Maximum and where Delta is defined as follows:

Delta = arctan(-Vds/Vqs) and

where Delta must be within the following range:

Delta Minimum ≤ Delta ≤ Delta Maximum.

13. (currently amended) A device to regulate current provided to a permanent magnet machine responsive to a plurality of phase current signals to produce torque on a shaft comprising:

a processing and drive circuit responsive to a direct voltage command signal and a quadrature voltage command signal, said processing and drive circuit configured to produce said plurality of phase current signals for input to said permanent magnet machine;

a current regulator including,

a command circuit responsive to a torque input command signal configured to produce a direct current command signal and a quadrature current command signal;

a control circuit responsive to the direct and quadrature current command signals configured to produce said direct and quadrature voltage command signals; and

a limiter configured to limit the direct and quadrature voltage command signals to a preselected level, ~~The device of claim 1~~ wherein said limiter is operative to limit said direct ~~and quadrature~~ voltage command signal (Vds) ~~signals Vds~~ and said quadrature voltage command signal (Vqs) ~~Vqs~~ as follows:

Vds = -Vmag* [sin(Delta Minimum]

Vqs = Vmag* [cos(Delta Minimum)]

Where Delta is less than Delta Minimum, and where Delta is defined as follows;

Delta = arctan(-Vds/Vqs) and

where Delta must be in within the following range:

Delta Minimum ≤ Delta ≤ Delta Maximum.

14. – 18. (canceled)

19. (new) A device to regulate current provided to a permanent magnet machine responsive to a plurality of phase current signals to produce torque on a shaft comprising:

a processing and drive circuit responsive to a direct voltage command signal (Vds) and a quadrature voltage command signal (Vqs) to produce the plurality of phase current signals for input to the permanent magnet machine;

a command circuit responsive to a torque input and configured to produce a direct current command signal (Ids) and a quadrature current command signal (Iqs);

a D-axis control circuit responsive to the direct current command signal (Ids) to produce the direct voltage command signal (Vds), the D-axis control circuit comprising a first clamp configured to limit the direct voltage command signal (Vds) to a preselected level;

a Q-axis control circuit responsive to the quadrature current command signal (Iqs) to produce the quadrature voltage command signal (Vqs), the Q-axis control circuit comprising a second clamp configured to limit the quadrature voltage command signal (Vqs) in the motoring mode to a quadrature voltage command signal limit value derived from the square root of the quantity $((Vmag^*)^2 - (Vds)^2)$, where Vmag* is a voltage magnitude command signal.

20. (new) A device to regulate current provided to a permanent magnet machine responsive to a plurality of phase current signals to produce torque on a shaft comprising:

a processing and drive circuit responsive to a direct voltage command signal (Vds) and a quadrature voltage command signal (Vqs) to produce the plurality of phase current signals for input to the permanent magnet machine;

a command circuit responsive to a torque input and configured to produce a direct current command signal (Ids) and a quadrature current command signal (Iqs);

a D-axis control circuit responsive to the direct current command signal (Ids) to produce the direct voltage command signal (Vds), the D-axis control circuit comprising a first clamp configured to limit the direct voltage command signal (Vds) to a preselected level;

a Q-axis control circuit responsive to the quadrature current command signal (Iqs) to produce the quadrature voltage command signal (Vqs),

the Q-axis control circuit comprising a second clamp configured to limit the quadrature voltage command signal (Vqs) in the motoring mode to a quadrature voltage command signal limit value derived from the quantity Vmag*, where Vmag* is a voltage magnitude command signal.